United Nations ECE/CES/GE.20/2014/8

Economic and Social Council

Distr.: General
24 February 2014

Original: English

Economic Commission for Europe

Conference of European Statisticians

Group of Experts on National Accounts

Thirteenth session
Geneva, 6 -9 May 2014
Agenda item 6
Measuring non-observed economy: informal and illegal

The underground economy in Canada, 1992 to 2011

Prepared by Statistics Canada

Summary

This paper presents the most recent underground economy estimates for Canada based on the three methods of measuring GDP, the expenditure-based approach, the income-based approach and the industry-based approach. The study innovates by providing an estimate of underground economy without the effect of inflation. The underground economy estimates are fully integrated with the revised framework of the Canadian System of National Accounts. Estimates presented give an upper bound, as recommended by the OECD Handbook on measuring the non-observed economy. The study provides an overview of the methods and data sources used to derive the estimates.

GE.14-20945

1420945

Please recycle

I. Introduction

1. Statistics Canada recently published a study that provides information on the extent of underground economic activity in Canada and the sources of these activities. The impact of these activities on the measurement of published gross domestic product (GDP) for Canada is also of concern.

2. The study is a continuation of work done by Statistics Canada on the measurement of Underground economy over the years. The first such study was published in 1986.

3. Canada estimation on underground economy are characterized by the fact that they are produced from the three GDP perspectives, that they are time series (1992 to 2011) and that they also include a underground economy estimate in terms of volume.

4. These estimates where developed to provide some quality insurance to the CSNA program. At the same time they answer the need of various government departments like Finances and Revenue Agencies.

5. When developing the estimates, one of the objectives was to open the debate on the quality of the CSNA estimates by providing, in clear, all the assumptions behind such estimates so that users of CSNA estimates are involved in the discussion related to underground economy.

6. Now that "underground economy" has become a regular statistical program, it becomes possible to improve the work on various issues related to underground economy. As an example we are currently examining the possibility of producing regional underground economy estimates.

7. The paper presented here includes the main sections of the longer study that was released in January 2014. It focuses on the definition and scope of the study (section 2) and provide a general overview of the approach used (section 3) before turning to results (section 4 and the Annex) and conclusion (section 5).

II. Definition and scope of the study

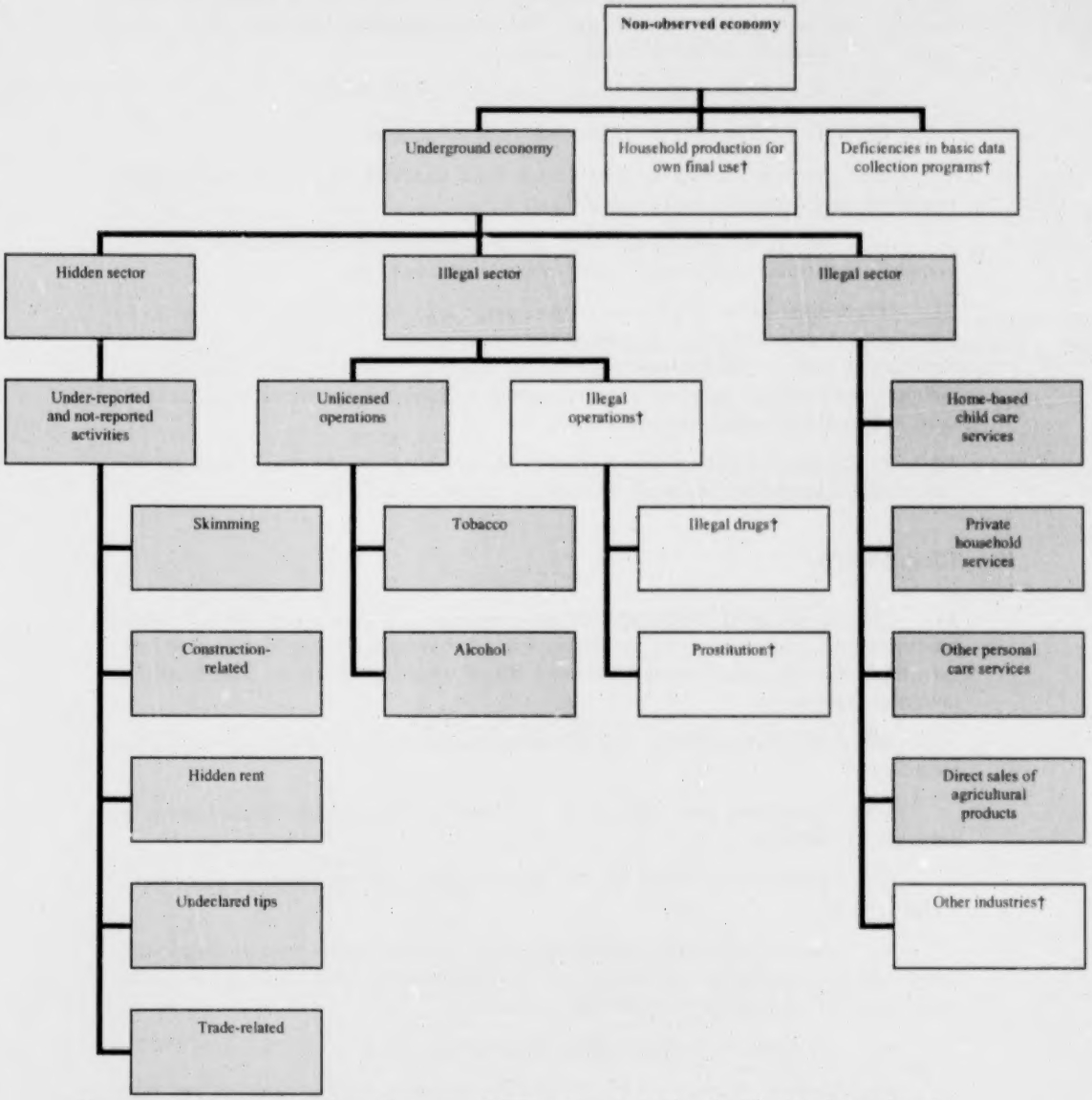
8. According to the Handbook for the Measurement of the Non-observed Economy, the five groups of activities that are collectively said to comprise the non-observed economy (NOE) are: (1) the hidden or underground sector, (2) the illegal sector, (3) the informal sector, (4) household production for own final use, and (5) deficiencies in the basic data collection programme (see Chart 1).[1]

9. The scope of this study is limited to market based productive activities carried out in selected components of the hidden, illegal, and informal sectors of the economy (i.e., the shaded areas in Chart 1). Some illegal production and all household production for own final use will not be included in the estimates. Statistical issues related to deficiencies in the basic data collection programme will not be addressed either.

[1]. "Measuring the Non-Observed Economy: A Handbook" (Organisation for Economic Co-operation and Development, International Monetary Fund, International Labour Organisation and CIS STAT (2002)).

Chart 1.

Framework for non-observed economy and underground economy



Notes: Three of the five non-observed economy (NOE) sectors, the hidden, the illegal, and the informal together make up the underground economy.

The categories marked with a dagger (†) are not included in the scope of the study. They are household production for own final use, deficiencies in basic data collection programs, illegal operations, illegal drugs, prostitution and other industries.

Source: Statistics Canada

A. Hidden sector

10. The hidden sector (also referred to as underground production in the Organisation for Economic Co-operation and Development (OECD) handbook) is defined as "those activities that are productive and legal but are deliberately concealed from public authorities"[2] generally for the following reasons:

(a) to avoid payment of income, value added or other taxes;

(b) to avoid payment of social security contributions;

(c) to avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.;

(d) to avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

11. The hidden sector includes both non-reported and under-reported production. In the latter case, it takes the form of under-reporting of revenues (or gross output), or over-reporting of costs (or intermediate inputs) in order to understate profits (or value added) to authorities or statistical agencies. This is labeled as skimming. In the former case, revenues, costs and profits are simply not reported.

12. In Canada, the hidden sector consists of skimming, construction-related activity, hidden rent, undeclared tips and export-related underground activities.

B. Illegal sector

13. The illegal sector represents illegal production of goods and services whose production, sale, distribution or mere possession is forbidden by law, as well as productive activities which are usually legal but become illegal when carried out by unauthorized or unlicensed producers.

14. Based on Blades (1983),[3] the following general types of illegal production are identified:

(a) production and distribution of illegal goods, such as banned drugs or pornographic material;

(b) production of illegal services, such as prostitution (in countries where this is illegal);

(c) production activities which are usually legal but which become illegal when carried out by unauthorized producers, such as unlicensed medical practices, unlicensed gambling activities, unlicensed production of alcohol;

(d) poaching, e.g., illegal fishing, hunting, tree cutting;

(e) production and sale of counterfeited products, such as watches and other products with false trade-marks and unauthorized copies of artistic originals, e.g., software, compact discs (CD) and videos;

---

[2]. Ibid., p. 37-38.

[3]. Blades, D. W. 1983. "Crime: What Should Be Included in the National Accounts and What Difference Would It Make." *The Economics of the Shadow Economy*, Proceedings of the International Conference on the Economics of Shadow Economy, held at the University of Bielefeld, Series in Contemporary Economics, vol. 15.

(f) smuggling, in particular of tobacco, weapons, alcohol, food, people, both wholesale and retail;

(g) fencing (resale) of stolen goods;

(h) bribery;

(i) money laundering.

15. Unlicensed operations represent those productive activities which are usually legal but become illegal when carried out by unauthorized producers. This study includes the illegal manufacturing, sales and imports (smuggling) of alcohol and tobacco, which are the two most important cases of unlicensed operations in Canada.

16. Illegal operations represent the production of goods and services whose sale, distribution or mere possession is forbidden by law, such as the production and sale of narcotic drugs. This study does not attempt to measure activity that is forbidden by law, due to the difficulty of obtaining reliable source data in these areas.

C. Informal sector

17. The informal sector represents informal production activities associated with establishments that are not registered with fiscal or social security authorities. As a result, they are generally missing from survey frames of statistical agencies, such as the Business Register (BR) used by Statistics Canada.[4,5] These entities include unincorporated businesses operating legally as unregistered establishments of the self-employed with and without informal employees.

18. The informal production activities included in this study are child-care in the home, private household services, other personal care services, and direct sales of agricultural products. Although household expenditure on these services is likely captured by the Survey of Household Spending (SHS), and is part of expenditure-based GDP, it is believed that income from these activities could be potentially missing from the income side of GDP.

19. The estimate of direct sales of agricultural products represents undeclared income of individuals selling farm produce such as fruits, vegetables, eggs and honey on road sides or temporary stands directly to consumers. This income is potentially missing from the income component of the retail industry or implicitly included elsewhere through national accounts balancing adjustments. The expenditure on these products is captured by the SHS and is in the published GDP numbers.

20. Firms or establishments operating in other industries without being registered with the fiscal or social security authorities are not included in this study. Although it is possible that underground activity exists in other industries, they have been excluded until further research determines the magnitude of this missing productive activity.

---

[4]. The BR is a repository of information reflecting the Canadian business population and exists primarily for the purpose of supplying frames for all economic surveys at Statistics Canada. Only businesses with a business number issued by the Canada Revenue Agency are represented on the BR. For more details, see Definitions and Concepts Used in the Business Register, Business Register Division, Statistics Canada (February 13, 2009).

[5]. In Canada, small businesses with total taxable revenues before expenses of $30,000 or less in the last four consecutive calendar quarters and in any single calendar quarter do not have to charge GST/HST to customers.

D. Household production for own final use

21. Production of households for own final use is defined as those productive activities that result in goods or services consumed by the households that produced them.

22. All goods produced by households on own-account are included in the CSNA production boundary, however, in Canada, in practice, only food grown by farmers for own-consumption is included. Services produced by households, on the other hand, are not included within the production boundary (e.g., cleaning, laundry) except for own-account rent, which already has a measurement methodology. Owner-occupied rent is counted in the official GDP, but not considered in this study.

E. Deficiencies in basic data collection program

23. The term "basic data collection program" is used to describe the statistical infrastructure and survey procedures that collect and process basic economic data.

24. The Canadian System of National Accounts (CSNA) and its feeder programs within Statistics Canada have developed a wide range of methods and procedures that address deficiencies in basic data collection. Statistics Canada data sources, from surveys or administrative forms, are subject to a quality assurance process that closely monitors and adjusts the data sampling and collection frames, employs a rigorous follow-up of surveys and subjects all data responses to validation checks to ensure the correctness and consistency of data.

25. After appropriate transformation to national accounting concepts, these datasets are used in the national accounts compilation process. Where these basic data are inadequate, the data gaps are filled and inconsistencies are resolved using indirect compilation methods that model the missing data using other related data (indicators) and that enforce accounting identities.

26. Given the various stages of data verification, integration and reconciliation carried out in the statistical system, this particular source of mis-measurement of the official GDP is not considered significant, and is not considered in this study.

III. Methodology and data sources

A. Broad methods of measurement

27. The OECD Handbook suggests four broad methods for measuring the non-observed economy. They include:

(a) upper bound estimation;

(b) special surveys and other supplementary data;

(c) data confrontation and discrepancy analysis;

(d) macro-model methods.

28. The **upper bound method** is used in Statistics Canada studies.[6] As mentioned in the OECD Handbook, "the essence of the procedure is to consider systematically for each component of GDP the maximum possible amount of non-observed economy (NOE) activities and to total the results to obtain an upper bound. The procedure can be applied by any or all of the expenditure, income and production approaches."[7] An example of this would be child care services; given the number of children under the age of five, and the proportion of families using child care services, it is possible to calculate an upper bound estimate of spending on child care.

29. Another method entails the use of **special surveys and other supplementary data**. The OECD Handbook indicates that "these are surveys that are not part of the basic data collection programme. They can take a variety of forms, being special surveys of expenditure, income, labour, time use, and opinion surveys. They can be designed to target any or all of the NOE problem areas – underground, illegal, informal sector and household production for own use. They can be conducted by the national statistical office or by other agencies including, for example, sample audits by the tax authorities."[8] For instance, this study examines tax audit files and compares them to survey information and to original revenues and expenses reported in tax returns. One difficulty associated with this approach is that the different sources of information are not always comparable. Consequently, differences between them may simply be due to misreporting as opposed to UE.

30. A third method suggested in the OECD Handbook is **data confrontation and discrepancy analysis**. The OECD highlights the fact that confrontation of data from different sources is an integral part of national accounts compilation. Examples of possible data confrontation are also listed in the OECD handbook,[9] and used in the regular production process of the CSNA:

(a) Enterprise survey data *versus* taxation data; wages paid *versus* taxes raised; sales of goods and services due to value added tax *versus* value added tax raised; and production *versus* production related taxes;

(b) Enterprise survey data measuring the production of commodities *versus* enterprise survey data measuring purchases of commodities; supply of goods and services *versus* the use of them;

(c) Expenditure survey data *versus* retail trade survey data; household expenditures *versus* retail trade;

(d) Expenditure survey data *versus* income or taxation data; household expenditures *versus* available income;

(e) Enterprise survey data *versus* labour force survey data; use of labour *versus* supply of labour; turnover, value added, intermediate consumption, etc. *versus* the use of labour.

31. Macro-model methods are discussed in Chapter 12 of the OECD Handbook but are not recommended as accurate measures of the underground or non-observed economy. The

---

6. Gervais, Gylianne 1994. "The Size of the Underground Economy in Canada", Statistics Canada, Catalogue no. 13-603-MPE1994002. Ottawa, Ontario, and Statistics Canada (2011) "Estimating the Underground Economy in Canada, 1998-2008".

7. "Measuring the Non-Observed Economy: A Handbook" (Organisation for Economic Co-operation and Development, International Monetary Fund, International Labour Organisation and CIS STAT (2002)). p. 54.

8. Ibid., p. 59.

9. Ibid., p. 51.

OECD suggests that these methods do not properly measure underground activity and provide very divergent results depending on the assumptions used.[10]

B. Overview of the CSNA estimation methodology

32. This study uses each of the first three methods listed above. The upper bound method is used to create most of the UE estimates relating to household spending and construction. Supplementary data is used for alcohol and tobacco and to refine estimates where possible and provide information on industry allocation. Data confrontation provides further indicators of the industrial distribution of UE activity.

33. Before explaining the approach used to measure UE GDP, the three ways to measure GDP are summarized. First, the final expenditure approach consists of summing the final expenditures on goods and services (household and government final spending, business investment outlays, and net exports). Second, the income approach consists in summing all the factor incomes (compensation of employees, gross operating surplus, and mixed income) generated in the production process plus net taxes on products and on production. Third, the industry or value-added approach consists of measuring the total production of each industry and removing the cost of intermediate inputs. When summed across all industries this results in the GDP at basic prices, GDP at market prices is obtained by adding taxes less subsidies on products to the GDP at basic prices.

34. Estimates of UE activity in Canada are most easily measured using the first approach mentioned above, by examining final expenditures by the various sectors in the economy: households, corporations, government, non-profit institutions serving households and non-residents. It is assumed here that final expenditures of government and non-profit institutions serving households are not underreported. For the other sectors, most of the estimates use the upper bound approach (see Appendix C for more detail). In the household sector, specific methodologies are used for final consumption of tobacco, alcohol, tips, and rents while an upper bound approach is used for all other commodities purchased by households. In this case, the UE activity is referred to as skimming.

35. In gross fixed capital formation[11] in the corporate sector the upper bound method is also used. Residential construction is considered the only investment activity that is prone to underground transactions. In the non-resident sector, UE exports are based on upper bound assumptions and imports, a deduction in the calculation of GDP, are estimated using a lower bound approach. While there could be some UE activities in the components of final demand where the study assumes no such activity (e.g. non-profit organizations and government), the assumption is that it is negligible.

36. Income-based UE GDP is benchmarked to the expenditure-based UE GDP estimate, and allocated to wages, surplus or mixed income based on assumptions outlined in Appendix C. It is important to note that returns to labour in the underground economy are assumed to be all in the form of wages, that is, there are no additional employer costs (e.g., EI and CPP/QPP premiums, employer pension contributions, etc.). Finally, consistent with the assumption made for the expenditure-side estimates, no revenue is assumed to flow

[10]. Ibid., p. 187.

[11]. This is the national accounts terminology for investment in physical assets.

directly to government from UE activities.[12] In other words, taxes collected and subsidies paid out are not hidden.

37. The industry-based UE GDP estimate is also benchmarked to the expenditure-based UE GDP estimate at the total level. For all the components that have a specific methodology in the GDP expenditure-based approach, the allocation by industry is done directly. This covers tobacco, alcohol, tips, construction, exports and imports. For the estimates of skimming, a confrontation approach using two different methods to allocate the UE activity by industry is used. First, the estimates of skimming (see explanation in Sections C.1.1.1 and C.3.2 in Appendix C) are allocated to the industry in which they are produced. Second, information from tax audit files from CRA is utilized to confront and adjust this distribution.

38. To summarize, several key assumptions are used throughout the study, namely:

(a) small business are more likely to participate in UE activities than large businesses;

(b) unincorporated businesses are more likely to engage in UE activities than incorporated businesses;

(c) the non-profit and government sectors do not take part in underground activity;

(d) corporate investment in residential structures, machinery and equipment as well as intellectual property is not subject to underground activity.

39. Assumptions like these are necessary, given the limited amount of direct information available on underground transactions. While debatable, they are considered reasonable for current purposes. If new information became available or more realistic assumptions were determined, they would be taken into account.

40. Appendix C (in the published study) explains in more detail the specific methodologies and assumptions used throughout the study.

C. Volume

41. With this study, a measure of the real underground economic activity (i.e., adjusted for inflation) is introduced. This is done using the same approach as used for the published real GDP, the Chain Fisher method.[13] The Chain Fisher method is considered the best approach to estimate the growth in volume and prices. The reference year chosen was 2007, the same as for the official GDP, which facilitates the comparison with official estimates.

42. The volume component of UE activity is measured by dividing the nominal value of a given series by an appropriate price index. This is referred to as deflation. For the UE estimates, the deflation of a series (such as household spending on alcohol) occurs at the lowest possible level for which a representative price index can be found. The deflated series are then aggregated together to derive various totals.

43. Real UE gross domestic product (UE GDP) is estimated from 124 series. The nominal values in these series are derived as described in the preceding sections. The price

[12]. This does not exclude the possibility that UE activities could indirectly contribute to government income. In fact income from UE activities eventually finds its way back into the formal economy, and thus generates tax revenue.

[13]. See Chapter 2 of *Guide to the Income and Expenditure Accounts*, Statistics Canada, Catalogue no. 13-017-XWE.

indexes are adjusted to remove tax for the household spending categories, as tax is not paid on UE purchases. Prices for gross fixed capital formation and exports are already "without taxes". The prices for imports are not adjusted because of a lack of information.

D. Data sources summary

44. Several data sources are used in this study. CSNA estimates, available in June 2013, were used extensively. Among them, the 2009 Input-Output tables were used to prepare all conversion matrixes relating industry information to household spending information. The Canadian productivity accounts were used to derive GDP by industry on a nominal basis. The income and expenditure accounts provided the time series for household spending and gross fixed capital formation.

45. Census of Population, Census technical reports and the SHS were used for households and dwelling estimates used in the estimation of rent and the analysis of UE spending on a household basis. The SHS was also used to validate skimming estimates for some categories of spending.

46. LCBO annual reports and information were used as a basis to estimate illegal alcohol.

47. The overall consumer price index (CPI) was used to derive the threshold (in terms of gross business income at constant prices) that define "small" businesses in this study. It was used in conjunction with tax databases maintained at Statistics Canada by the Tax Data Division.[14] These databases pertain to unincorporated (from the T1 income tax form) and incorporated business (from the T2 income tax form) income tax returns. By using this tax information it was possible to obtain the operating revenues and operating expenses on a NAICS basis for businesses in Canada. These were used as the main input into the skimming estimates.

48. The Tax Data Division also provided a tax audit data file for incorporated businesses showing the original information provided on the tax return and the latest information after all audits by the CRA. This file was used to estimate reassessment rates by industry. The estimates derived from this file were used to obtain a better industry allocation of skimming.

IV. Results

49. In 2011, the estimated upper bound for total underground economy activity was $40.9 billion. This is equivalent to 2.3% of GDP. This proportion trended down during the mid- to late 1990s, from a high of 2.6% in 1994 until 2001 when it reached its current level of 2.3%. That proportion remained relatively stable in the decade that followed.

50. The underground economy (UE) can be defined as consisting of market-based economic activities, whether legal or illegal, that escape measurement due to their hidden, illegal, or informal nature. For the purpose of this study, some illegal activities (such as drug trafficking and prostitution) have been excluded.

51. In 2011, the four most significant industries in terms of UE activity were construction (28%), finance, insurance, real estate, rental and leasing and holding

[14]. The use of the CPI to establish thresholds is described in Appendix C, Section C.1.1.1 (In the published study).

companies (13%), retail trade (12%) and accommodation and food services (12%). These four industries, together, comprised almost 65% of the total UE value added.

52. Household final consumption expenditure totaled about 65% of UE activities in 2011. Business gross fixed capital formation accounted for another 28%, and net trade for 7%. UE activities related to household final consumption expenditure could have amounted to as much as $1,948 per household in 2011. The top five categories are food and beverage services ($405 per household), paid rental fees for housing ($369 per household), tobacco ($154 per household), alcoholic beverages ($142 per household) and food ($113 per household).

53. Over 48% of all the income from UE activities went to households in the form of wages and tip. Corporations received the second highest share (28%), and unincorporated businesses, was next at 24%.Wages paid under the table and undeclared tips accounted for an estimated $19.7 billion in 2011 at an upper bound, equivalent to 2.2% of the published estimates of compensation of employees. This amount represents $1,406 for every job in the business sector in 2011.

54. Table 1 from the Annex provides the estimates pertaining to year 2011 from the three GDP perspectives.

V. Conclusion and further work

55. This study presented upper bound estimates of the underground economy that could be missing from official GDP in Canada from 1992 to 2011. The estimates make use of strong, but plausible, assumptions on the potential magnitude of UE activity in the economy. As such, they provide an indication of the extent to which UE activity impacts the macroeconomic aggregates for each of the three measures of GDP: income, expenditure, and industry.

56. The estimates indicate that UE as a share of the official GDP has been quite stable in the last decade. It also indicates that UE is concentrated in certain categories of spending and in certain industries.

57. This study introduces several improvements. Estimates are now more timely, and include adjustments for the effects of inflation and are based on the revised CSNA2012 framework that reflects the international SNA 2008 guidelines.

58. One purpose of this study was to assess the quality of the official estimates produced by Statistics Canada. It finds that at most the GDP could be understated by 2.3% and that incorporating UE in official estimates would not change significantly the overall growth pattern of the economy.[15]

59. There are other applications for this type of study. For instance, it may be used as a starting point for specialized studies on specific underground activities and sensitivity analysis of the various assumptions and approaches taken in this field of work.

60. In terms of future work, there are several avenues to explore. Among them, expanding this study to a provincial and territorial basis would be both useful for Statistics Canada and respond to requests from users. Regarding national level estimates, several avenues may be explored in the future. First, methodologies for specific portions of UE, especially the household spending expenditures could be improved. Second, it would be

[15]. It is worth noting that it is difficult to assess the impact of UE on overall growth during period of recession since there are only a few comparison points.

useful to clarify with more precision what portion of UE is already accounted for in the official estimates. Such a study would provide useful information for policy analysis as well as for examining the accuracy of official GDP estimates. Third, an avenue to explore is the sensitivity of UE estimates to the various data sources, methods and assumptions made. Fourth, the scope of the analysis could be expanded to examine in more detail UE spending on copyrights, software piracy, internet trade, prostitution or illegal drugs. Finally, further work could be carried to explore the possibility of expanding the industry information to a more disaggregated level.

VI. References

Australian Bureau of Statistics. 2013. *The-Non-Observed Economy and Australia's GDP, 2012*. Australian Bureau of Statistics, Publication 5204.0.55.008. Canberra.

Baldwin, J.R., D. Leung, and L. Rispoli. 2013. *Canadian Labour Productivity Differences Across Firm Size Classes, 2002 to 2008*. The Canadian Productivity Review, no. 32. Statistics Canada, catalogue no. 15-206-X. Ottawa: Statistics Canada. http://www.statcan.gc.ca/pub/15-206-x/15-206-x2013032-eng.htm (accessed 2013-09-03).

Barber-Dueck, C., B. Terefe and M.J. Lamontagne. 2011. *Estimating the Underground Economy in Canada, 1992-2008*. Income and Expenditure Accounts Division. Ottawa: Statistics Canada.

Berger, S. 1986. *The Unrecorded Economy: Concepts, Approach and Preliminary Estimates for Canada, 1981*. Canadian Statistical Review, April 1986. Statistics Canada, catalogue no. 11-003E. Ottawa: Statistics Canada.

Blades, D.W. 1985. *Crime: What Should Be Included in the National Accounts and What Difference Would It Make*. The Economic of the Shadow Economy, proceedings of the International Conference on the Economics of Shadow Economy, held at the University of Bielefeld, Series in contemporary Economics, vol. 15.

Blades, D.W. and D. Roberts. 2002. *Measuring the Non-Observed Economy*. OECD Statistics Brief. no. 5. Paris. http://www.oecd.org/std/2389461.pdf (accessed 2013-09-01).

Atlantic Home Building & Renovation – sector council. 2004. Current Impact of the Underground Economy – Residential Construction Sector in Nova Scotia. Nova Scotia, Canada. http://www.ahbrsc.com/downloads/ue%20final%20report.pdf (accessed 2013-09-01).

European Union. 2011. "Chapter 6: The Informal Sector." *Essential SNA: Building the Basics, 2010 Edition*. EUROSTAT methodologies & Working Papers. Luxembourg. p. *97-112*.

Fortin, B., G. Lacroix and D. Pinard. 2010. "An Evaluation of the Underground Economy in Quebec: A Microeconometric Approach". *International Economic Journal* 24 (4): 463-479.

Fortin, B., P. Fréchette and J. Noreau. 1992. "L'Économie Souterraine au Québec". *Interface* 13 (3): 16-18.

Gervais, G. 1994. *The Size of the Underground Economy in Canada*. Studies in National Accounting, no 2. Statistics Canada, catalogue no. 13-603-MPE1994002. Ottawa: Statistics Canada.

Gomis-Porqueras, P., A. Peralta-Alva and C. Waller. 2011. *Quantifying the Shadow Economy: Measurement with Theory*. Working Paper 2011-015A. Federal Reserve Bank of St-Louis. St-Louis.

Jackson, C. 1992. *The Value of Household Work in Canada, 1986*. Income and Expenditure Accounts technical series, no. 19. Statistics Canada, catalogue no. 13-604-MIE. Ottawa: Statistics Canada.

Kemp, K. 1992. *Cross-Border Shopping - Trends and Measurement Issues*. Income and Expenditure Accounts technical series, no. 21. Statistics Canada, catalogue no. 13-604-MIE. Ottawa: Statistics Canada.

Lachenmeier D.W. 2012. "Unrecorded and Illicit alcohol." *Alcohol in the European Union. Consumption, Harm and Policy Approaches*. In: Anderson, P., L. Møller and G. Galea (ed.). WHO Regional Office for Europe, Copenhagen, Denmark. p. 29-34.

Lachenmeier, D.W., G. Gmel and J. Rehm. 2013. *"Unrecorded Alcohol Consumption." Alcohol Science, Policy and Public Health*. Oxford University Press, United Kingdom. p. 132-142.

LCBO. 2003-2011. *Annual Reports*. Ontario.

Lemieux, P. 2007. *"The Underground Economy: Causes, Extent, Approaches."* Cahiers de recherche de l'Institut économique de Montréal. November 2007. Montreal, Canada. p. 36. http://www.iedm.org/305-leconomie-souterraine-causes-importance-options (accessed 2013-06-03).

Macdonnal, S., S. Wells, and N. Giesbrecht. 1999. "Unrecorded Alcohol Consumption in Ontario, Canada: Estimation Procedures and Research Implications." *Drug and Alcohol Review* 18: 21-29.

Ministère des finances du gouvernement du Québec. 2005. "L'Évasion Fiscale au Québec – Sources et Ampleur." *Études économiques, fiscales et budgétaires*. Vol. 1, no. 1. Québec, Canada.

Morissette, Charles. 2012. *The underground economy in Canada, 1992 to 2009*. The Daily, Statistics Canada, September 21st, 2012. Ottawa: Statistics Canada. http://www.statcan.gc.ca/daily-quotidien/120921/dq120921g-eng.htm (accessed 2013-06-01).

Ontario Construction Secretariat. 2010. "Underground Economy in Construction – It Costs Us All." Ontario, Canada. http://www.iciconstruction.com/resources/industry_publications/underground_economy_issues.cfm (accessed 2013-06-01).

Organisation for Economic Co-operation and Development, International Monetary Fund, International Labour Organisation and CIS STAT. 2002. *Measuring the Non-Observed Economy: A Handbook*. OECD, Paris. http://www.oecd.org/std/na/measuringthenon-observedeconomy-ahandbook.htm (accessed 2013-06-01).

Schneider, Friedrich. 2011. *Size and Development of the Shadow Economy of 31 European and 5 Other OECD Countries from 2003 to 2012: Some New Facts*. Johannes Kepler Universitat. http://www.econ.jku.at/members/Schneider/files/publications/2012/ShadEcEurope31.pdf (accessed 2013-09-01).

Statistics Canada. 2009. *Satellite Account of Non-profit Institutions and Volunteering*. Statistics Canada, catalogue no. 13-015-XIE. Ottawa, Ontario. http://www.statcan.gc.ca/pub/13-015-x/13-015-x2009000-eng.htm (accessed 2013-09-01).

—. 2008. *Guide to the Income and Expenditure Accounts*. Statistics Canada, catalogue no.13-017-X, Ottawa, Ontario. http://www.statcan.gc.ca/pub/13-017-x/13-017-x2008001-eng.pdf (Accessed 2013-06-28).

—. 1990. *Guide to the Income and Expenditure Accounts*. Statistics Canada, catalogue no. 13-603E, no. 1. Ottawa, Ontario.

—. nd. *Financial and Taxation Statistics for Enterprises*. Statistics Canada, catalogue no. 61-219. Ottawa, Ontario. http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?lang=eng&catno=61-219-XWE (accessed 2013-09-01)

Terefe, Berouk. 2002. *The Underground Economy in Canada*. Income and Expenditure Accounts Division. Statistics Canada, unpublished working paper. Ottawa, Ontario.

United Nations Economic Commission for Europe. 2008. *Non-Observed Economy in National Accounts – Survey of Country Practices*. United Nations Publication. New York and Geneva. http://www.unece.org/stats/publications/NOE2008.pdf (accessed 2013-06-01)

World Health Organization. 2011. *Global Status Report on Alcohol and Health*. Switzerland. http://www.who.int/substance_abuse/publications/global_alcohol_report/en/ (accessed 2013-09-01)

Annex (English only)

Table 1.

Underground economy estimates - reconciliation of GDP by the 3 approaches, year 2011 millions of dollars

IO industry Classification System (NAICS based)	*GDP Expenditure-side*								
	Household final consumption expenditure					Business gross fixed capital formation	Exports of goods and services	Imports of goods and services	GDP
	Illegal alcohol & tobacco	Rent, rooming & boarding	Tips	Skimming of receipts selling to household	TOTAL	Residential construction	Exports	Imports	
Crop and animal production	0	0	0	1021	1021	0	654	0	1675
Forestry and logging	0	0	0	48	48	0	0	0	48
Fishing, hunting and trapping	0	0	0	35	35	0	40	0	75
Support activities for agriculture and forestry	0	0	0	17	17	0	0	0	17
Mining, quarrying, and oil and gas extraction	0	0	0	81	81	0	40	0	121
Utilities	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	11446	0	0	11455
Other activities of the construction industry	0	0	0	0	0	0	8	0	8
Manufacturing	469	0	0	230	700	33	2230	-114	2849
Wholesale trade	0	0	0	144	144	0	82	0	226
Retail trade	2940	0	0	2842	5783	0	5	-1045	4743
Transportation and warehousing	0	0	39	588	627	0	87	0	714
Information and cultural industries	0	0	0	151	151	0	208	0	359
Finance, insurance, real estate, rental and leasing and holding companies	0	0	0	5436	5436	0	14	0	5451
Owner occupied dwellings	0	565	0	0	565	0	0	0	565
Professional, scientific, and technical services	0	0	0	1535	1535	0	632	0	2167
Administrative and support and waste management and remediation services	0	0	0	643	643	0	119	0	761
Educational services	0	0	0	238	238	0	0	0	238
Health care and social assistance	0	0	0	1835	1835	0	0	0	1835
Arts, entertainment, and recreation	0	0	0	624	624	0	16	0	639
Accommodation and food services	412	0	1430	2905	4747	0	3	0	4751
Other services (except public administration)	0	0	264	1894	2158	0	19	0	2178
Non-profit institutions serving households	0	0	0	10	10	0	0	0	10
Government services	0	0	0	0	0	0	0	0	0
TOTAL	**3822**	**565**	**1734**	**20276**	**26397**	**11480**	**4157**	**-1159**	**40875**

	GDP Income-side									
	GDP	Compensation of employees			Operating surplus	Mixed income				
		Wages and salaries	Tips	TOTAL	TOTAL	Skimming	Construction	Illegal alcohol and tobacco	Rent, rooming & boarding	TOTAL
Crop and animal production	1675	837	0	837	515	322	0	0	0	322
Forestry and logging	48	24	0	24	16	7	0	0	0	7
Fishing, hunting and trapping	75	38	0	38	29	8	0	0	0	8
Support activities for agriculture and forestry	17	8	0	8	4	5	0	0	0	5
Mining, quarrying, and oil and gas extraction	121	61	0	61	57	4	0	0	0	4
Utilities	0	0	0	0	0	0	0	0	0	0
Construction	11455	5727	0	5727	3663	0	2064	0	0	2064
Other activities of the construction industry	8	4	0	4	4	0	0	0	0	0
Manufacturing	2849	1247	0	1247	1228	13	6	355	0	375
Wholesale trade	226	113	0	113	105	8	0	0	0	8
Retail trade	4743	1424	0	1424	1035	389	0	1895	0	2284
Transportation and warehousing	714	337	39	376	198	140	0	0	0	140
Information and cultural industries	359	179	0	179	161	18	0	0	0	18
Finance, insurance, real estate, rental and leasing and holding companies	5451	2725	0	2725	890	1835	0	0	0	1835
Owner occupied dwellings	565	0	0	0	0	0	0	0	565	565
Professional, scientific, and technical services	2167	1084	0	1084	792	292	0	0	0	292
Administrative and support and waste management and remediation services	761	381	0	381	248	133	0	0	0	133
Educational services	238	119	0	119	81	38	0	0	0	38
Health care and social assistance	1835	917	0	917	444	473	0	0	0	473
Arts, entertainment, and recreation	639	320	0	320	207	113	0	0	0	113
Accommodation and food services	4751	1454	1430	2885	1253	201	0	412	0	613
Other services (except public administration)	2178	957	264	1221	581	375	0	0	0	375
Non-profit institutions serving households	10	5	0	5	5	0	0	0	0	0
Government services	0	0	0	0	0	0	0	0	0	0
TOTAL	**40875**	**17956**	**1734**	**19690**	**11512**	**4375**	**2070**	**2663**	**565**	**9673**